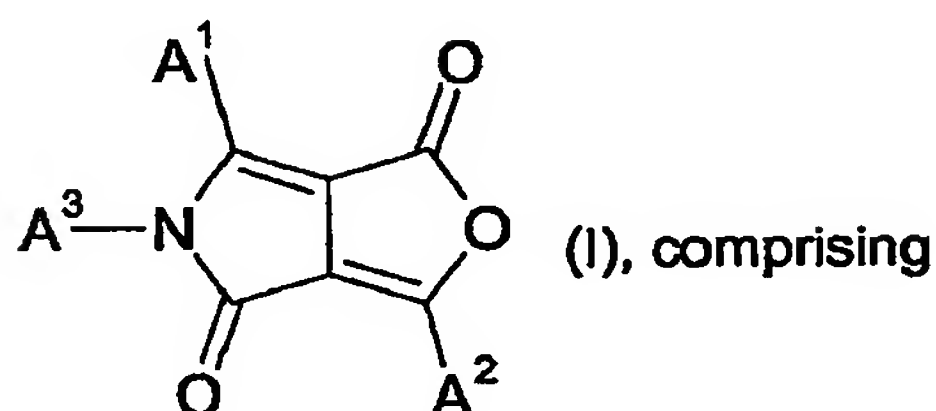
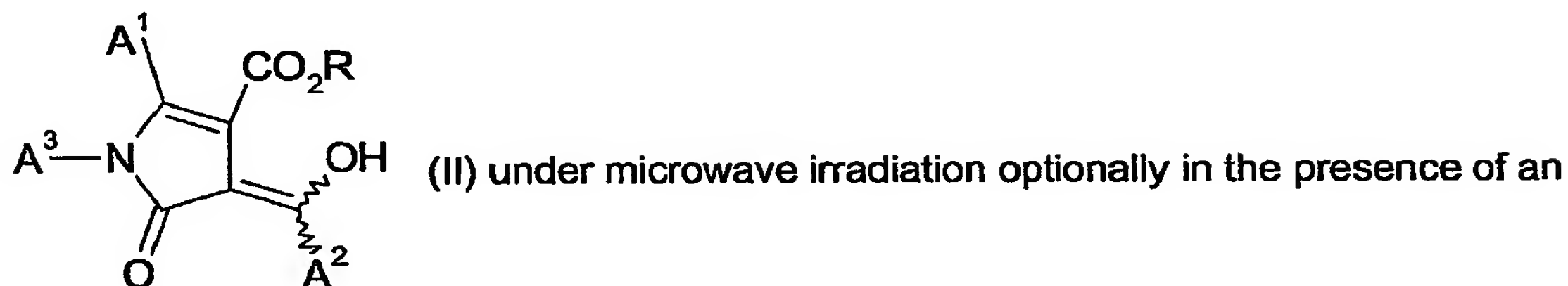


Claims

1. A process for the preparation of furopyrroles of the general formula



- 5 (a) heating a compound of the formula



inert solvent,

wherein A¹ and A² are C₁-C₁₈alkyl, C₂-C₁₈alkenyl, C₂-C₁₈alkynyl, C₅-C₈cycloalkyl, C₅-C₈cycloalkenyl, aryl or heteroaryl,

- 10 A³ is hydrogen, C₁-C₁₈alkyl, cyanomethyl, Ar³, -CR³⁰R³¹-(CH₂)ₘ-Ar³ or Y-R³², wherein R³⁰ and R³¹ independently of each other stand for hydrogen or C₁-C₄alkyl, or phenyl which can be substituted up to three times with C₁-C₄alkyl,

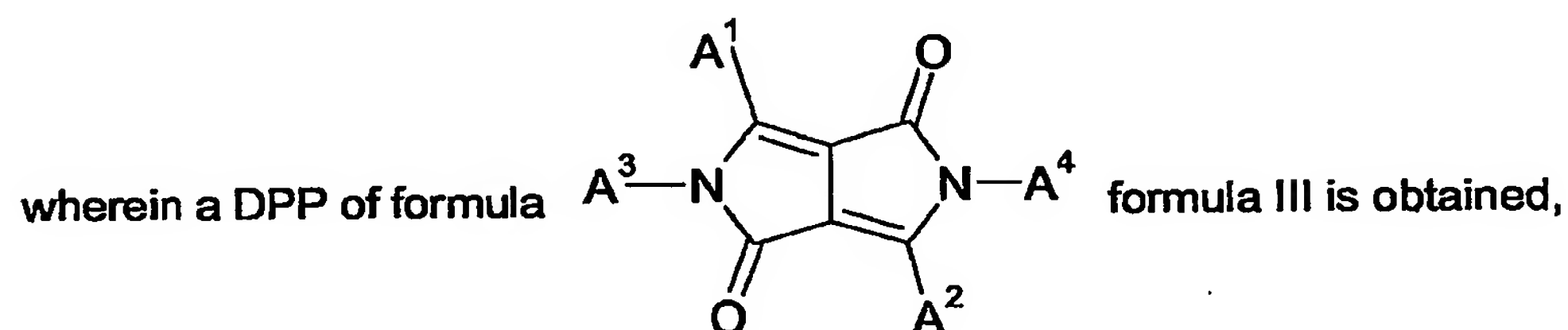
- Ar³ stands for aryl, C₅-C₈cycloalkyl, C₅-C₈cycloalkenyl or heteroaryl, which can be substituted one to three times with C₁-C₈alkyl, C₁-C₈alkoxy, halogen or phenyl, which
15 can be substituted with C₁-C₈alkyl or C₁-C₈alkoxy one to three times, and m stands for 0, 1, 2, 3 or 4,

R is C₁-C₁₈alkyl, in particular C₁-C₄alkyl, aryl, in particular phenyl, or aralkyl, in particular benzyl, which can be substituted one to three times with C₁-C₈alkyl, C₁-C₈alkoxy, or halogen,

- 20 Y is -C(O)-, -C(O)O-, -C(O)NH-, -SO₂NH- or -SO₂- and R³² is C₁-C₁₈alkyl, Ar³, or aralkyl.

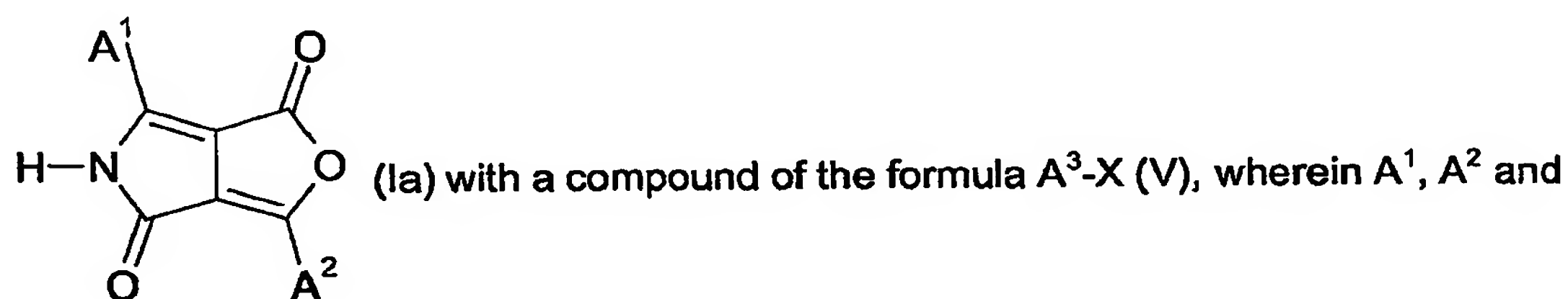
2. The process according to claim 1, comprising in addition

reacting a compound of formula I with a primary amine of the formula A^4-NH_2 (IV),



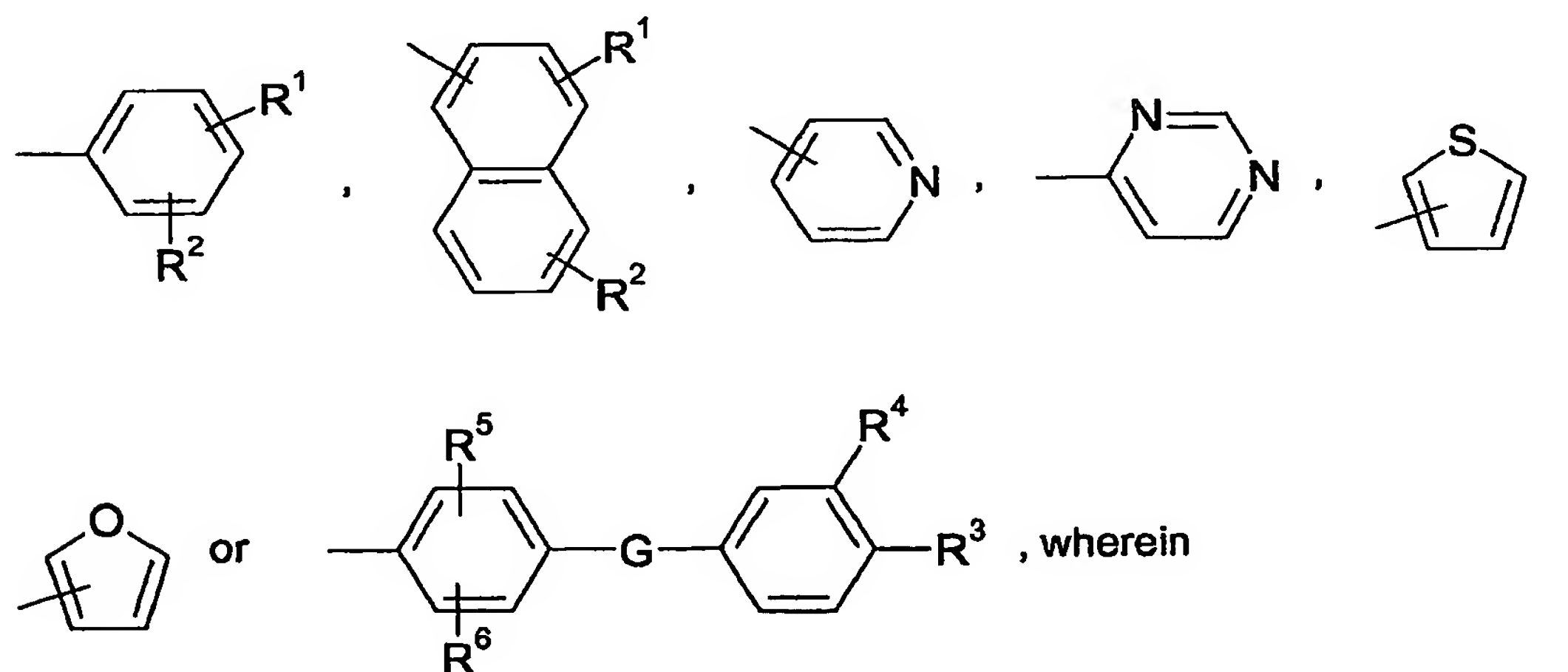
wherein A^4 is C_1-C_{18} alkyl or Ar^3 , wherein Ar^3 , A^1 , A^2 and A^3 are defined as in claim 1.

- 5 3. The process according to claim 1, wherein the compound of the formula I, wherein A^3 is different from a hydrogen atom, is obtained by reacting a compound of the formula



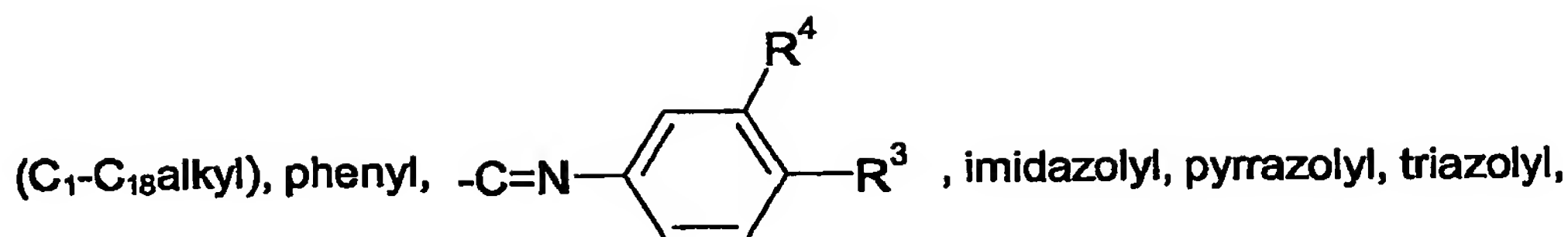
A^3 have the meanings as given in claim 1 and X is a leaving group.

- 10 4. The process according to any of claims 1 to 3, wherein A^1 and A^2 are radicals of the formula



- 15 R^1 and R^2 are independently of each other hydrogen, halogen, C_1-C_{18} alkyl, C_1-C_{18} alkoxy, C_1-C_{18} alkylmercapto, C_1-C_{18} alkylamino, C_1-C_{18} alkoxycarbonyl, C_1-C_{18} alkylaminocarbonyl, -CN, -NO₂, trifluoromethyl, C_5-C_8 cycloalkyl, -C=N-

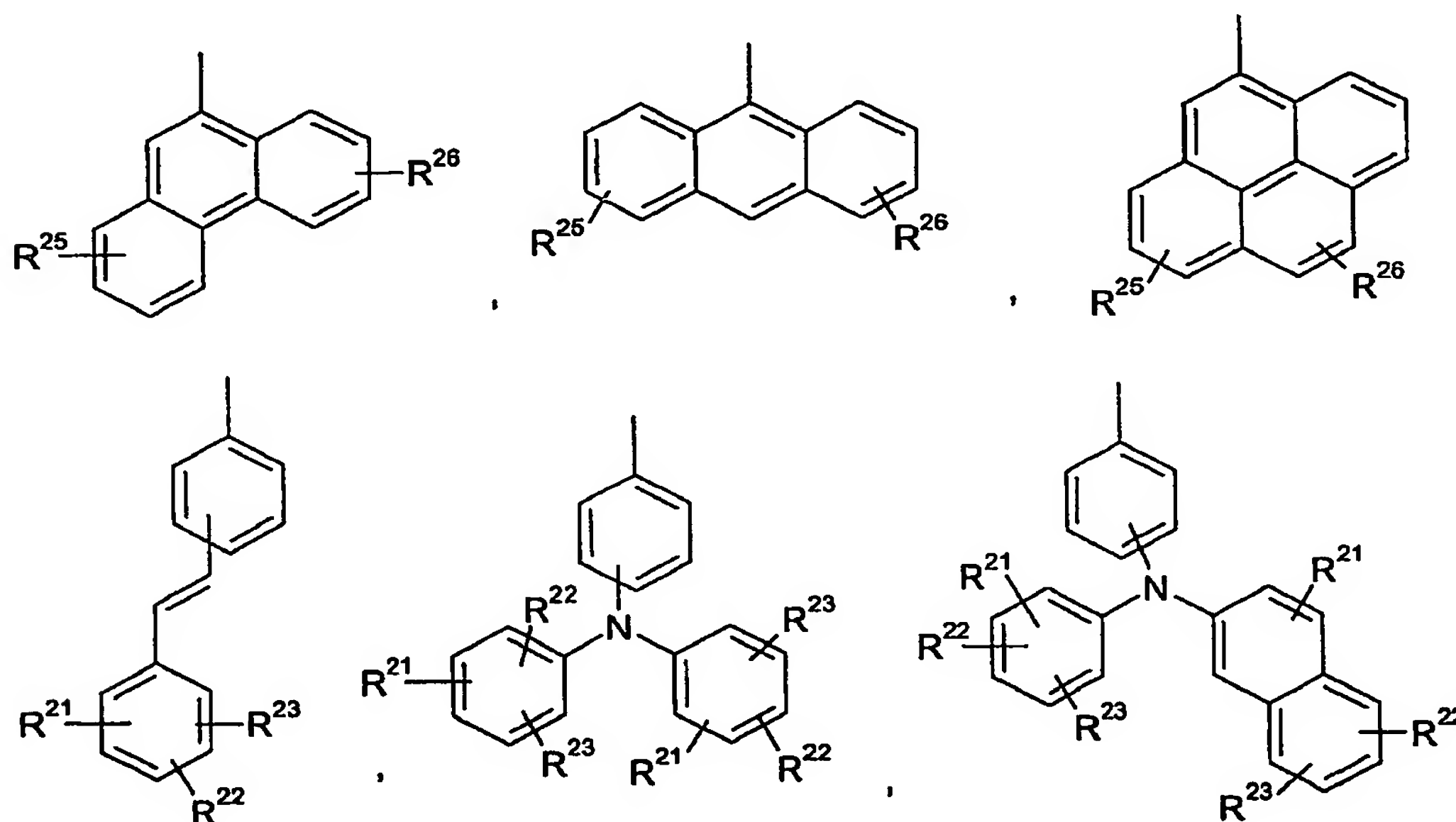
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5 piperazinyl, pyrrolyl, oxazolyl, benzoxazolyl, benzothiazolyl, benzimidazolyl, morpholinyl, piperidinyl or pyrrolidinyl, $-\text{CONX}^5\text{X}^6$, $-\text{C}(\text{O})\text{OX}^7$ or $-\text{SO}_2\text{X}^9$; wherein X^5 and X^6 are hydrogen, linear or branched C₁₋₁₀-alkyl, C₅₋₁₀-cycloalkyl or C₆₋₁₀-aryl, X^7 is hydrogen, linear or branched C₁₋₁₀-alkyl, C₅₋₁₀-cycloalkyl or C₆₋₁₀-aryl, X^9 is hydrogen, linear or branched C₁₋₁₀-alkyl, C₅₋₁₀-cycloalkyl, C₇₋₁₀-aralkyl, C₆₋₁₀-aryl or $-\text{NX}^{10}\text{X}^{11}$, wherein X^{10} and X^{11} are hydrogen, linear or branched C₁₋₁₀-alkyl, C₇₋₁₀-aralkyl or C₆₋₁₀-aryl,

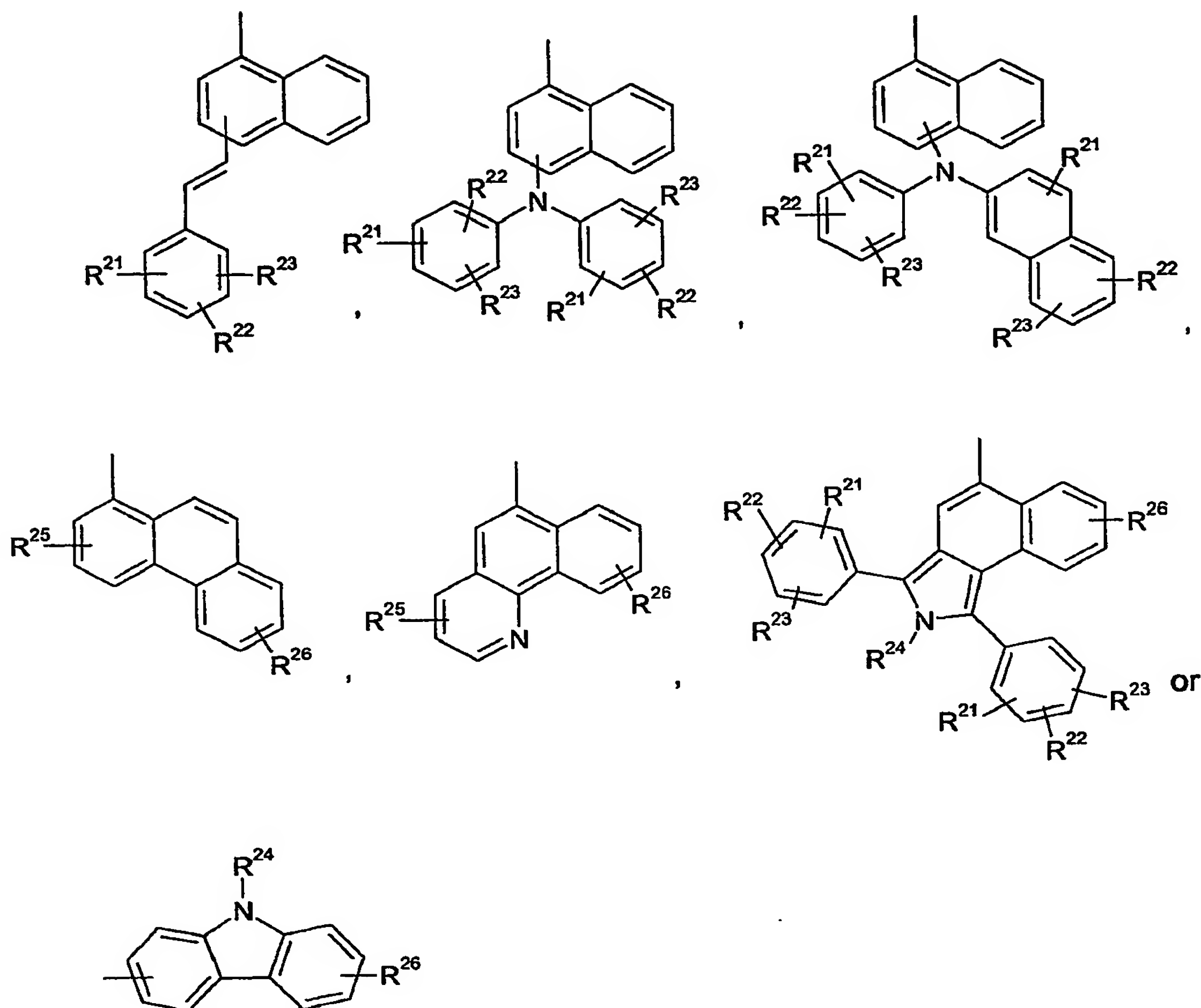
10 G is $-\text{CH}_2-$, $-\text{CH}(\text{CH}_3)-$, $-\text{C}(\text{CH}_3)_2-$, $-\text{CH}=\text{N}-$, $-\text{N}=\text{N}-$, $-\text{O}-$, $-\text{S}-$, $-\text{SO}-$, $-\text{SO}_2-$, $-\text{SO}_2\text{NH}-$, $-\text{CONH}-$ or $-\text{NR}^7-$,

R^3 and R^4 are independently of each other hydrogen, halogen, C₁-C₆alkyl, C₁-C₁₈alkoxy or $-\text{CN}$, R^5 and R^6 are independently of each other hydrogen, halogen or C₁-C₆alkyl, and R^7 is hydrogen or C₁-C₆alkyl; or radicals of the formula



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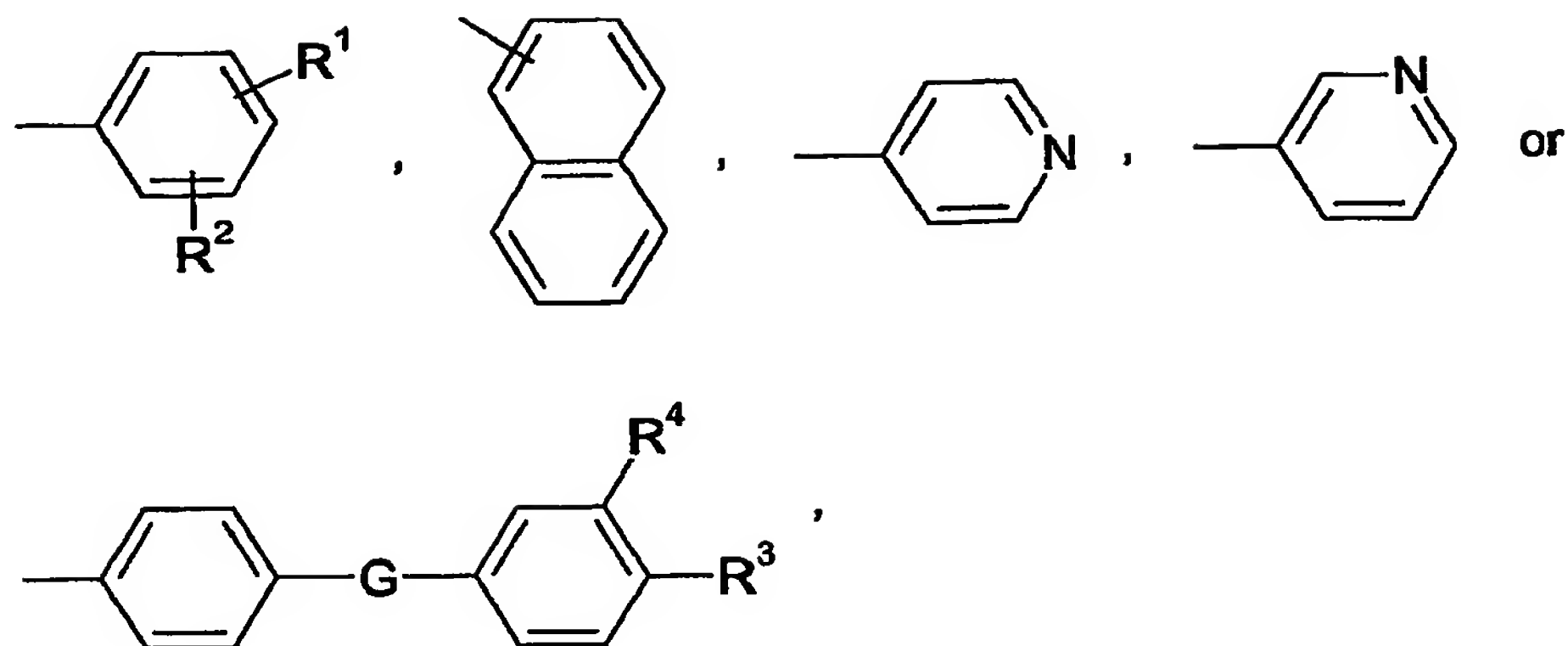
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wherein R²¹, R²², R²³, R²⁵ and R²⁶ are independently of each other hydrogen, C₁-C₈alkyl, a hydroxyl group, a mercapto group, C₁-C₈alkoxy, C₁-C₈alkylthio, halogen, halo-C₁-C₈alkyl, a cyano group, an aldehyde group, a ketone group, a carboxyl group, an ester group, a carbamoyl group, an amino group, a nitro group, a silyl group or a siloxanyl group and R²⁴ is a C₁-C₈alkyl group.

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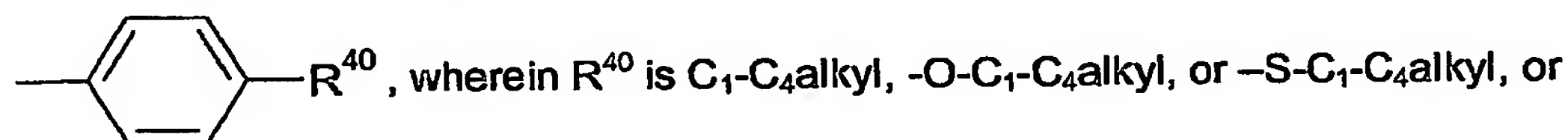
5. The process according to claim 4, wherein A¹ and A² are radicals of the formula

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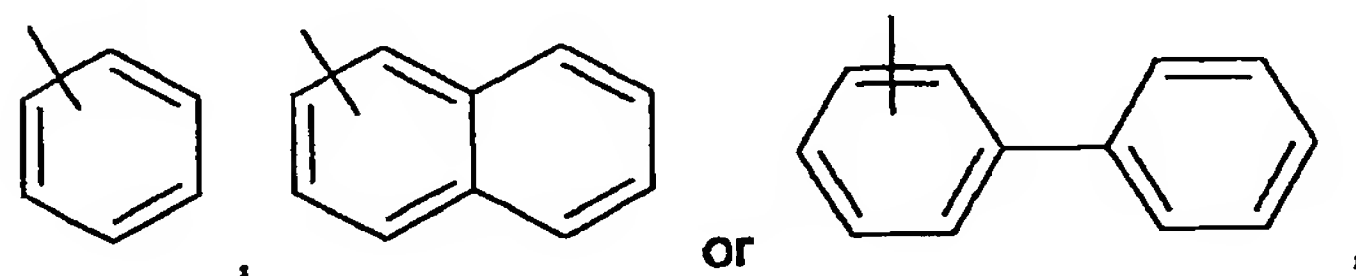


wherein R^1 and R^2 are independently of each other hydrogen, chloro, bromo, C_1 - C_4 alkyl, C_1 - C_6 alkoxy, C_1 - C_6 alkylamino, phenyl or CN,
 5 G is $-O-$, $-NR^7-$, $-N=N-$ or $-SO_2-$,
 R^3 and R^4 are hydrogen, and
 R^7 is hydrogen, methyl or ethyl.

6. The process according to claim 4 or 5, wherein A^3 is cyanomethyl, C_1 - C_8 alkyl such as methyl, ethyl, n-propyl, isopropyl, n-butyl, sec.-butyl, isobutyl, tert.-butyl, n-pentyl, 2-pentyl, 3-pentyl, 2,2-dimethylpropyl, n-hexyl, n-heptyl, n-octyl, 1,1,3,3-tetramethylbutyl and 2-ethylhexyl, $Y-R^{32}$ wherein Y is $-C(O)-$ and R^{32} is

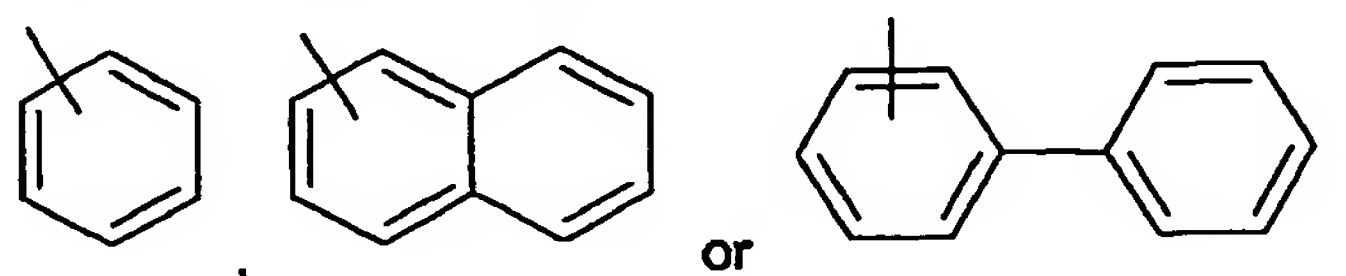


$-(CH_2)_m-Ar$ wherein m is 1 and Ar is a group of the formula



which can be substituted one to three times with C_1 - C_8 alkyl, C_1 - C_8 alkoxy, halogen or phenyl.

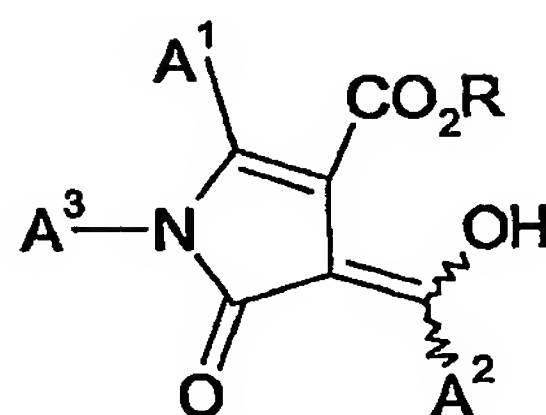
7. The process according to any of claims 4 to 6, wherein A^4 is



which can be substituted one to three times with C_1 - C_8 alkyl, C_1 - C_8 alkoxy, halogen or phenyl.

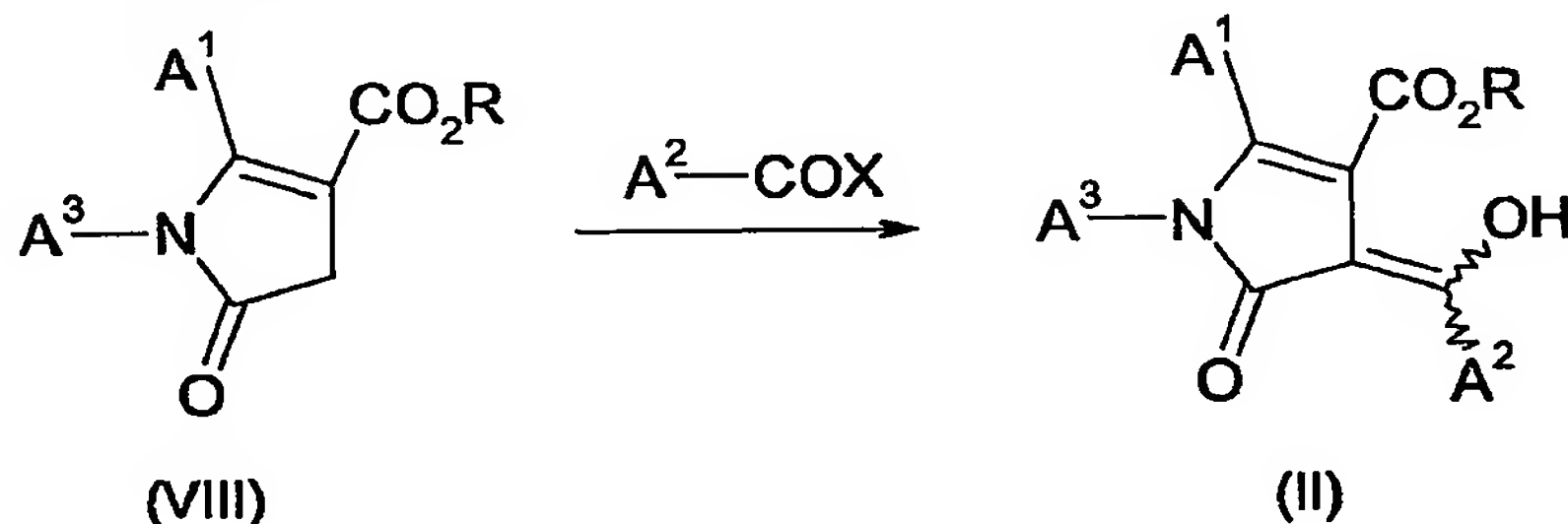
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8. The process according to any of claims 1 to 7, wherein the starting compound of formula (II)



(II)

is obtained by reacting a compound of formula (VIII) with an acyl halide $A^2 - \text{COX}$:

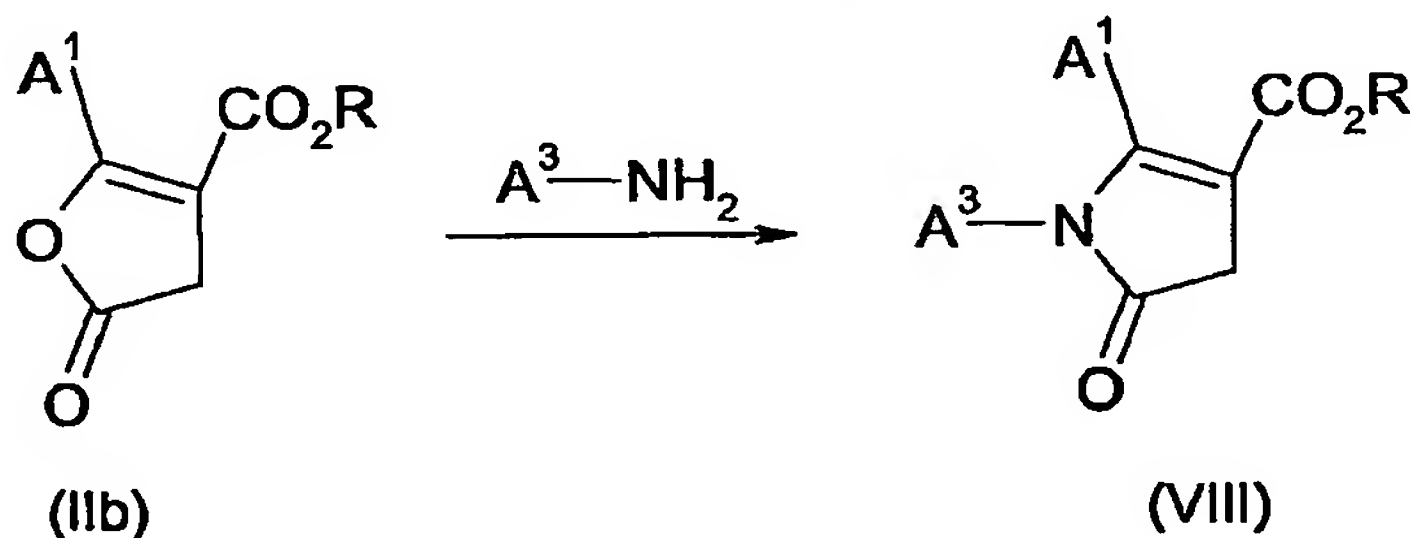


(VIII)

(II)

wherein R, A^1 and A^2 have the same meaning as given in claim 1, A^3 is aryl, and X is halogen, preferably chlorine.

9. The process according to claim 8, wherein the compound of formula (VIII) is obtained by reacting a compound of formula (IIb) with an amine $A^3 - \text{NH}_2$:



(IIb)

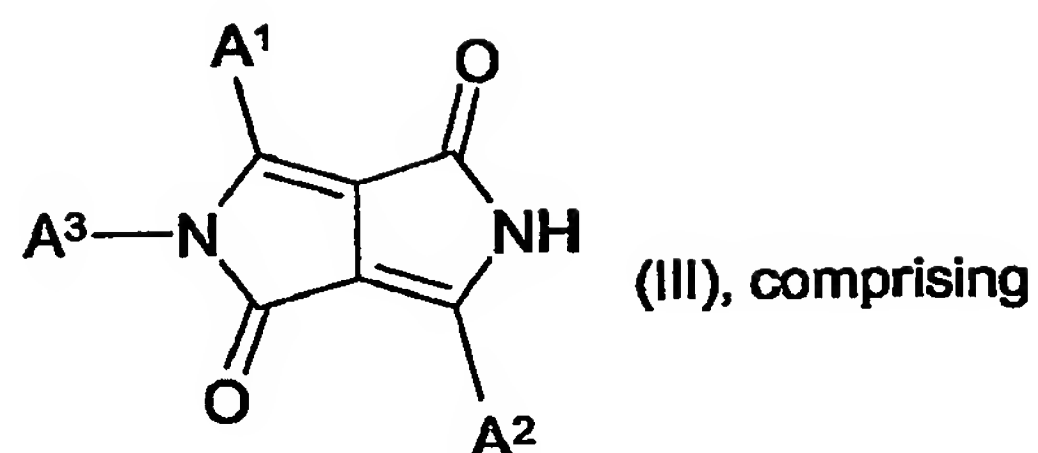
(VIII)

wherein R and A^1 have the same meaning as given in claim 1 and A^3 is aryl

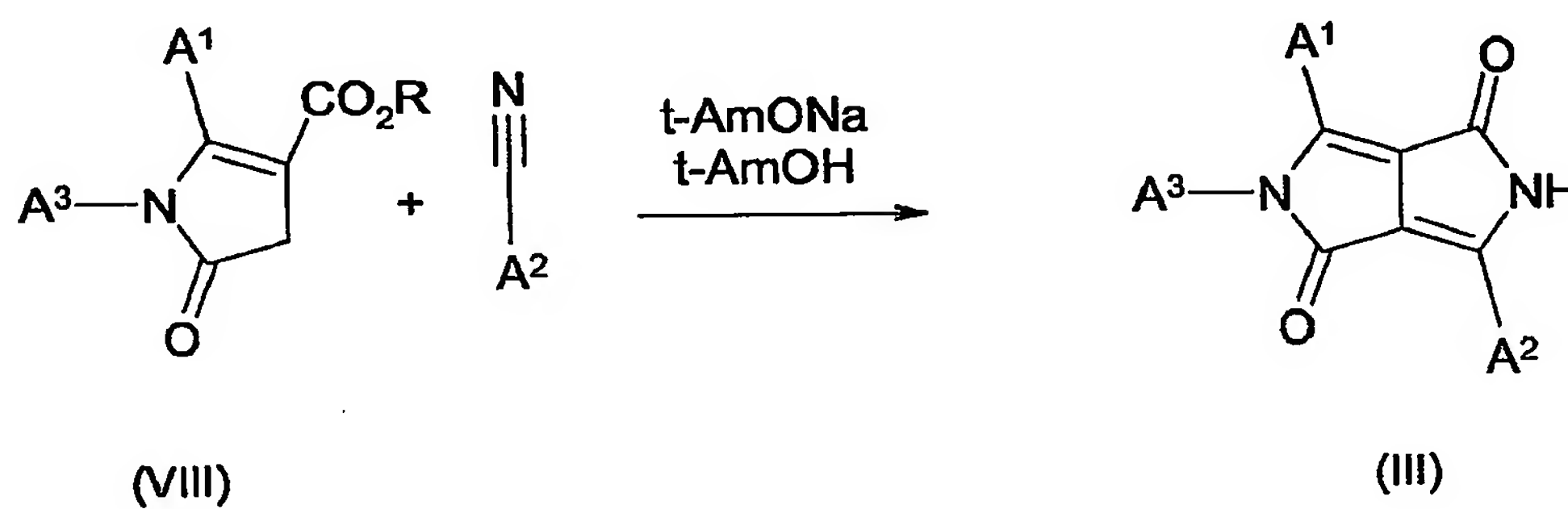
10. The process according to claim 8 or 9, wherein $A^2 - \text{COX}$ is benzoyl chloride and $A^3 - \text{NH}_2$ is aniline.

11. A process for the preparation of a DPP of general formula:

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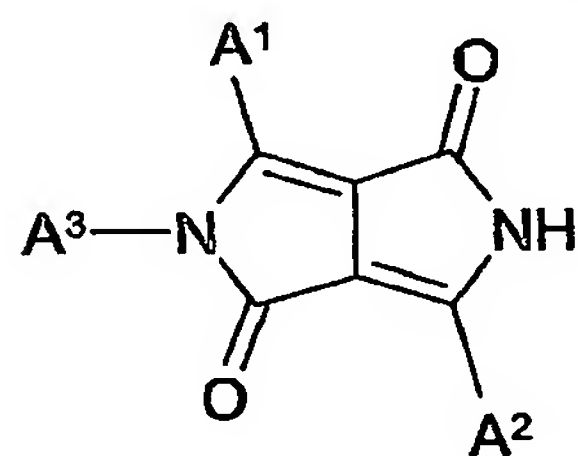
reacting a compound of formula (VIII) with a nitrile A^2-CN , preferably benzonitril:



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wherein A^1 , A^2 and A^3 have the meanings as given in claim 1.

12. A DPP of general formula (III)



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wherein A^1 , A^2 and A^3 have the meanings as given in claim 1.